

1 What is claimed is:

2
3 Sub B1 1. A playback system for reproducing audio data and
4 reading acoustic control data comprising
5 a demultiplexer for retrieving audio data and
6 acoustic control data

7 said acoustic control data providing a
8 predetermined number N of inputs to
9 gain and phase circuits,
10 delay and reverberation circuits,
11 equalizer circuits, and
12 gain/attenuation circuits,
13 said gain/attenuation circuits connected
14 to output to a second predetermined number M of summation
15 channels,

16 said audio data feeding serially through said
17 gain and phase circuits,
18 delay and reverberation circuits, and
19 equalizer circuits.

20
21 2. The playback system for reproducing audio data and
22 reading acoustic control data of claim 1 further comprising a
23 listener input circuit connected to provide signals, said
24 listener input signals adapted to alter default data from said
25 media and to interact dynamically with bias information in said
26 default data.

1
2 3. The playback system for reproducing audio data and
3 reading acoustic control data of claim 1 further comprising a
4 player type register providing a signal indicative of parameters
5 of the playback medium to said gain and phase circuits, delay and
6 reverberation circuits, and equalizer circuits to provide infor-
7 mation indicative of the characteristics of a player for the
8 media.

9
10 4. The playback system for reproducing audio data and
11 reading acoustic control data of claim 2 further comprising a
12 player type register providing a signal indicative of parameters
13 of the playback medium to said gain and phase circuits, delay and
14 reverberation circuits, and equalizer circuits to provide infor-
15 mation indicative of the characteristics of a player for the
16 media.

17
18 5. The playback system for reproducing audio data and
19 reading acoustic control data of claim 3 wherein said player type
20 register is adapted to provide information to active noise
21 cancellation apparatus.

22
23 6. The playback system for reproducing audio data and
24 reading acoustic control data of claim 4 wherein said player type
25 register is adapted to provide information to active noise can-
26 cellation apparatus.

1 7. The playback system for reproducing audio data and
2 reading acoustic control data of claim 1, further comprising,
3 a loop closing subsystem interfaced to said playback system
4 comprising

5 a programmable delay,
6 a second generator for test signals,
7 precision microphones to receive returned informa-
8 tion from said test signals,
9 connections to provide parameter corrections to
10 parameters of said playback system.

11
12 8. The playback system for reproducing audio data and
13 reading acoustic control data of claim 2, further comprising,
14 a loop closing subsystem interfaced to said playback system com-
15 prising

16 a programmable delay,
17 a second generator for test signals,
18 precision microphones to receive returned informa-
19 tion from said test signals,
20 connections to provide parameter corrections to
21 parameters of said playback system.

22
23 9. The playback system for reproducing audio data and
24 reading acoustic control data of claim 3, further comprising,
25 a loop closing subsystem interfaced to said playback system com-
26 prising

1 a programmable delay,
2 a second generator for test signals,
3 precision microphones to receive returned informa-
4 tion from said test signals,
5 connections to provide parameter corrections to
6 parameters of said playback system.

7
8 10. The playback system for reproducing audio data and
9 reading acoustic control data of claim 4, further comprising,
10 a loop closing subsystem interfaced to said playback system com-
11 prising

12 a programmable delay,
13 a second generator for test signals,
14 precision microphones to receive returned informa-
15 tion from said test signals,
16 connections to provide parameter corrections to
17 parameters of said playback system.

18
19 11. The playback system for reproducing audio data and
20 reading acoustic control data of claim 5, further comprising,
21 a loop closing subsystem interfaced to said playback system com-
22 prising

23 a programmable delay,
24 a second generator for test signals,
25 precision microphones to receive returned informa-
26 tion from said test signals,

1 connections to provide parameter corrections to
2 parameters of said playback system.

3
4 12. The playback system for reproducing audio data and
5 reading acoustic control data of claim 6, further comprising,
6 a loop closing subsystem interfaced to said playback system com-
7 prising

8 a programmable delay,
9 a second generator for test signals,
10 precision microphones to receive returned informa-
11 tion from said test signals,

12 connections to provide parameter corrections to
13 parameters of said playback system.

14
15 13. The playback system for reproducing audio data and
16 reading acoustic control data of claim 1, wherein said playback
17 system further comprises a metadata display system.

18
19 14. The playback system for reproducing audio data and
20 reading acoustic control data of claim 7, wherein said playback
21 system further comprises a metadata display system

22
23 15. A system for recording acoustical control data to
24 optimize performance of audio reproduction and provide data for
25 the recreation of an original acoustic environment comprising
26 a recording system comprising

1 a precision microphone to provide signals to an
2 authoring system and test signal generator,
3 said authoring system generating and recording
4 acoustic control information comprising acoustic venue
5 information and control room venue information,
6 said acoustic venue information comprising
7 studio dynamic data comprising data selected
8 from the group concerning
9 reverb time,
10 delay time,
11 standing waves,
12 ambient noise,
13 room frequency response, and
14 room dynamics information
15 said control room venue information comprising
16 data concerning
17 reverb time,
18 delay time,
19 standing waves, and
20 ambient noise
21 said test signal generator adapted to output
22 preprogrammed test signals for a predetermined time and to detect
23 received returned signals to determine recording acoustic
24 information,
25 a data multiplexer to bring together as
26 multiplexed data said acoustic control information and audio

1 information,

2 recording apparatus for fixing said multiplexed
3 data in a medium capable of mass reproduction.

4
5 16. The system for recording acoustical control data
6 to optimize performance of audio reproduction and provide data
7 for the recreation of an original acoustic environment of claim
8 15 wherein said acoustic venue information further comprises
9 meta data comprising data selected from the group
10 concerning

11 instrument placement,

12 instrument separation and partitioning

13 peak or RMS limiting

14 console recorded information comprising

15 equalization

16 compression.

17
18 17. A system for recording and reading acoustical
19 control data and playing back acoustical information controlled
20 by such data to optimize performance of audio reproduction and
21 recreate an original acoustic environment comprising

22 a recording system comprising

23 a precision microphone to provide signals to an
24 authoring system and test signal generator,

25 said authoring system generating and recording
26 acoustic control information comprising acoustic venue informa-

tion and control room venue information,
said acoustic venue information comprising
meta data comprising data selected from the
group concerning
instrument placement,
instrument separation and partitioning
placement,
peak or RMS limiting
console recorded information comprising
equalization
compression
studio dynamic data comprising data
selected from the group concerning
reverb time,
delay time,
standing waves,
ambient noise,
room frequency response, and
room dynamics information
said control room venue information comprising
data selected from the group concerning
reverb time,
delay time,
standing waves, and
ambient noise
said test signal generator adapted to output

1 preprogrammed test signals for a predetermined time and to detect
2 received returned signals to determine recording acoustic
3 information,

4 a data multiplexer to bring together as
5 multiplexed data said acoustic control information and audio
6 information,

7 recording apparatus for fixing said multiplexed
8 data in a medium capable of mass reproduction,

9 media produced from said mass reproduction medium,

10 a playback system for reproducing audio data and
11 reading acoustic control data comprising

12 a demultiplexer for retrieving audio data and
13 acoustic control data

14 said acoustic control data providing a
15 predetermined number N of inputs to

16 gain and

17 metadata display systems, and

18 a player type register providing a signal
19 indicative of parameters of the playback medium to said gain and
20 phase circuits, delay and reverberation circuits, and equalizer
21 circuits to provide information indicative of the characteristics
22 of a player for the media,

23 said player type register adapted to provide
24 information to active noise cancellation apparatus,

25 a loop closing subsystem interfaced to said
26 playback system comprising

1 a programmable delay,
2 a second generator for test signals,
3 precision microphones to receive returned informa-
4 tion from said test signals,
5 connections to provide parameter corrections to
6 parameters of said playback system.

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